

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application. Please amend the claims as follows.

1-10. (Canceled)

11. (Currently Amended) An integrated optical add/drop device having switching function for use in wavelength division multiplexing optical communication systems, the add/drop device comprising:

first and second interferometric arms of an interferometer, the first and second interferometric arms being located between first and second 3-dB optical coupling regions; -comprising:

~~an~~ a tunable optical filter having first and second input ports and first and second output ports, said first input port being connected to a first portion of said first interferometric arm, said second input port being connected to a first portion of said second interferometric arm, said first output port being connected to a second portion of said first interferometric arm, said second output port being connected to a second portion of said second interferometric arm, said tunable optical filter being configured for acting as a selective switch exchanger for exchanging between one interferometric arm and the other at least one of a plurality of optical signals $S(\lambda_1)$, $S(\lambda_2)$, ..., $S(\lambda_n)$, received at its input ports and for transmitting the remaining optical signals through its output ports in said first and second interferometric arms; and

at least first and second variable optical phase shifters located on opposite sides of said optical filter.

12. (Canceled)

13. (Currently Amended) The device according to Claim 11, wherein each of said first and second phase shifter ~~introduces~~ is configured to introduce a phase shift of $0 \pm 2\pi N$ into each optical signal $S(\lambda_1), S(\lambda_2), \dots, S(\lambda_n), S_1(\lambda_1), S_2(\lambda_2), \dots, S_n(\lambda_n)$, propagating in said first and second interferometric arms when it is in a first state, wherein N is an integer number.

14. (Currently Amended) The device according to Claim 11 ~~any one of claims 11-13~~, wherein each of said first and second phase shifter ~~introduces~~ is configured to introduce a phase shift of $\pi/2 \pm 2\pi N$ into each optical signal $S(\lambda_1), S(\lambda_2), \dots, S(\lambda_n), S_1(\lambda_1), S_2(\lambda_2), \dots, S_n(\lambda_n)$, propagating in said first and second interferometric arms when it is in a second state, wherein N is an integer number.

15. (Currently Amended) The device according to any one of Claims 11, 13, or 14, ~~Claim 14~~, wherein each phase shifter is located in a different interferometric arm.

16. (Previously Presented) The device according to Claim 15, wherein said first phase shifter is located in said first portion of said first interferometric arm and said

second phase shifter is located in said second portion of said second interferometric arm.

17. (Currently Amended) The device according to any one of Claims ~~11-13~~11, 13, or 14, wherein said first and second phase shifters are both located on a same one of said first and second interferometric arms.

18. (Currently Amended) The device according to Claim 17, wherein said first phase shifter is located in said first portion of said ~~first~~same one interferometric arm and said second phase shifter is located in said second portion of said ~~first~~same one interferometric arm.

19. (Previously Presented) The device according to Claim 11, wherein said interferometer is a Mach Zehnder interferometer.

20. (Currently Amended) A method for optical tuning, ~~adding or dropping optical signals in an integrated optical add/drop device in wavelength division multiplexing optical communications~~, comprising the steps of:

receiving, at an optical add/drop device comprising first and second interferometric arms of an interferometer, a plurality of input optical signals $S(\lambda_1)$, $S(\lambda_2)$, ..., $S(\lambda_n)$ centered on respective central wavelengths λ_1 , λ_2 , ..., λ_n ;

forming two pluralities of half-power optical signals from said plurality of input optical signals;

sending a plurality of said two pluralities of half-power optical signals $S(\lambda_1)$, $S(\lambda_2)$, ..., $S(\lambda_n)$, to respective ~~respectively to a first portions~~ portion of said first and second interferometric arms ~~arm~~ and to a first portion of said second interferometric arm;

exchanging between one interferometric arm to the other interferometric arm the two half-power optical signals that are centered on at least one of said plurality of central wavelengths; optical signals $S(\lambda_1)$, $S(\lambda_2)$, ..., $S(\lambda_n)$;

transmitting the two half-power optical signals that are centered on the remaining central wavelengths respectively to a ~~optical signals in respective second portions~~ portion of said first and second interferometric arm and to a second portion of said second interferometric arm, so as to obtain two pluralities of exchanged half-power optical signals respectively on said second portions of said first and second interferometric arms; and

introducing a phase shift on at least one of said first portions and at least one of said second portions of said first and second interferometric arms; ~~for switching said integrated optical add/drop device from a first state to a second state.~~

recombining the two pluralities of half-power optical signals; and
tuning said at least one of said plurality of central wavelengths on which the two exchanged half-power optical signals are centered.

Please add the following new claims 21-30:

21. (New) The device according to Claim 15, wherein said tunable optical filter is configured for acting as a selective switch exchanger for exchanging between one

interferometric arm to the other interferometric arm no more than one of said plurality of optical signals $S(\lambda_1)$, $S(\lambda_2)$, ..., $S(\lambda_n)$.

22. (New) The device according to Claim 15, wherein the tunable optical filter comprises an even number of series-coupled resonator-cavity loops accommodated between the first and the second interferometric arm.

23. (New) The device according to Claim 15, wherein the tunable optical filter is realized using cascaded optical couplers subdivided by Mach-Zehnder interferometers sections having different respective interferometric arm lengths.

24. (New) The device according to Claim 17, wherein said tunable optical filter is configured for acting as a selective switch exchanger for exchanging between one interferometric arm to the other all but one of said plurality of optical signals $S(\lambda_1)$, $S(\lambda_2)$, ..., $S(\lambda_n)$.

25. (New) The device according to Claim 17, wherein the tunable optical filter is realized by means of a symmetric Mach-Zehnder interferometer coupled to a resonator-cavity loop configured to introduce a π phase-shift only at a resonant wavelength.

26. (New) The device according to claim 14, the device being configured so that the tunable optical filter is tuned when it is in said second state.

27. (New) The device according to Claim 11, wherein said first and second variable optical phase shifters are configured to introduce substantially the same phase shift into each optical signal propagating in and through said first and second interferometric arms.

28. (New) The method according to claim 20, wherein the two pluralities of exchanged half-power optical signals are recombined in order to form a full-power plurality of optical signals, said phase shift being selected so that the recombined full-power plurality of optical signals forms the input plurality of optical signals.

29. (New) The method according to claim 28, wherein said phase shift is equal to $\pi/2 \pm 2\pi N$ at each half-power optical signal propagating in said first and second interferometric arms, wherein N is an integer number.

30. (New) The method according to any one of Claims 20, 28, or 29, the phase shift being substantially the same for each half-power optical signal propagating in and through said first and second interferometric arms.